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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,029	01/08/2004	Jong-Kwon Kim	5000-1-497	6088
33942 7590 01/10/2007 CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652			EXAMINER TRAN, DZUNG D	
			ART UNIT 2613	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS		MAIL DATE 01/10/2007	DELIVERY MODE PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/754,029

Applicant(s)

KIM ET AL.

Examiner

Dzung D. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marom US Patent no. 6,950,609 in view of Chen et al. US Patent no. 6,546,167.

Regarding claim 1, Marom discloses in Figure 7, an optical add/drop multiplexer connected to an optical fiber for transmission of a multiplexed optical signal, comprising:

a wavelength division multiplexing/demultiplexing (WDM) unit 730 connected to the optical fiber 720 having input and output ports providing a path for a multiplexed optical signal, and a plurality of demultiplexing ports (740-1, 740-2, ..., 740-k) respectively providing paths for demultiplexed channels; and

a plurality of add/drop multiplexer (ADM) units (e.g., add/drop units that connect to respectively connected to demultiplexing ports 740-1, 740-2, ..., 740-k of the WDM unit. Marom differs from claim 1 of the present invention in that he does not specifically disclose each of the ADM units including first and second circulators adapted to output a channel, input to a higher-order port, to a lower-order port, and a reflector for passing or reflecting a channel input thereto, wherein the first circulator receives a channel at a

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second port, outputs the channel to a third port connected to the reflector, receives the channel from the reflector at the third port, and outputs the channel to a fourth port, thereby dropping the channel. Chen discloses an ADM unit 30 including first 32 and second circulators 34 adapted to output a channel, input to a higher-order port, to a lower-order port, and a reflector 36 for passing or reflecting a channel input thereto, wherein the first circulator receives a channel at a second port 38, outputs the channel to a third port 40 connected to the reflector 36, receives the channel from the reflector at the third port 40, and outputs the channel to a fourth port 42, thereby dropping the channel.

It would have been obvious to an artisan at the time of the invention was made replace the ADM unit taught by Chen with the ADM of Marom discloses in Figure 7. One of ordinary skill in the art would have been motivated to do that in order to redirect the output optical signal back to the bi-directional input/output fiber.

Regarding claim 2, Marom discloses in Figure 7, wherein the WDM unit comprises:

an end circulator 715 having first through third ports and adapted to output an optical signal, input to a higher-order port, to a lower-order port, the first and third ports of the end circulator connected to the optical fiber 750, 710 for transmission of the multiplexed optical signal; and

a wavelength division multiplexer/demultiplexer (WDM) 730 having a multiplexing port connected to the second port of the end circulator and providing a path 720 for a

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multiplexed optical signal, and a plurality of demultiplexing ports 740-1, 740-2, ..., 740-k respectively providing paths for demultiplexed channels.

Regarding claim 3, Examiner take an official notice that wavelength division multiplexer/demultiplexer (WDM) comprises an arrayed waveguide grating is well recognized in the art.

Regarding claims 4 and 7, Marom discloses in Figure 7, an optical add/drop multiplexer connected to an optical fiber for transmission of a multiplexed optical signal, comprising:

a wavelength division multiplexing/demultiplexing (WDM) unit 730 connected to the optical fiber 720 having input and output ports providing a path for a multiplexed optical signal, and a plurality of demultiplexing ports (740-1, 740-2, ..., 740-k) respectively providing paths for demultiplexed channels; and

a plurality of add/drop multiplexer (ADM) units (e.g., add/drop units that connect to respectively connected to demultiplexing ports 740-1, 740-2, ..., 740-k of the WDM unit. Marom differs from claim 4 of the present invention in that he does not specifically disclose, each of the ADM units including first and second circulators adapted to output a channel, input to a higher-order port, to a lower-order port, and a reflector for passing or reflecting a channel input thereto, wherein the second circulator receives a channel at a first port, outputs the channel to a second port connected to the reflector, receives the channel from the reflector at the second port, and outputs the channel to a third port connected to a first port of the first circulator, thereby adding the channel.

Chen discloses an ADM unit 30 including first 32 and second circulators 34 adapted to

output a channel, input to a higher-order port, to a lower-order port, and a reflector 36 for passing or reflecting a channel input thereto, wherein the second circulator 34 receives a channel at a first port 48, outputs the channel to a second port 44 connected to the reflector 36, receives the channel from the reflector at the second port 44, and outputs the channel to a third port 46, thereby adding the channel. Chen does not disclose the third port of second circulator is connected to a first port of the first circulator. Since Chen add/drop is used for uni-directional fiber, it would have been obvious to an artisan at the time of the invention was made to connect the third port of second circulator is connected to a first port of the first circulator for transmitting the optical signal back to bi-directional fiber. One of ordinary skill in the art would have been motivated to do that in order to redirect the output optical signal back to the bi-directional input/output fiber.

Regarding claims 5 and 8, Marom discloses in Figure 7, wherein the WDM unit comprises:

an end circulator 715 having first through third ports and adapted to output an optical signal, input to a higher-order port, to a lower-order port, the first and third ports of the end circulator connected to the optical fiber 750, 710 for transmission of the multiplexed optical signal; and

a wavelength division multiplexer/demultiplexer (WDM) 730 having a multiplexing port connected to the second port of the end circulator and providing a path 720 for a multiplexed optical signal, and a plurality of demultiplexing ports 740-1, 740-2, ..., 740-k respectively providing paths for demultiplexed channels.

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Regarding claims 6 and 9, Examiner take an official notice that wavelength division multiplexer/demultiplexer (WDM) comprises an arrayed waveguide grating is well recognized in the art.

Regarding claim 10, Marom discloses in Figure 7, an optical add/drop multiplexer connected to an optical fiber for transmission of a multiplexed optical signal, comprising:

a wavelength division multiplexing/demultiplexing (WDM) unit 730 connected to the optical fiber 720 having input and output ports providing a path for a multiplexed optical signal, and a plurality of demultiplexing ports (740-1, 740-2, ..., 740-k) respectively providing paths for demultiplexed channels; and

a plurality of add/drop multiplexer (ADM) units (e.g., add/drop units that connect to respectively connected to demultiplexing ports 740-1, 740-2, ..., 740-k of the WDM unit. Marom differs from claim 10 of the present invention in that he does not specifically disclose each of the ADM units including a circulator adapted to output a channel, input to a higher-order port, to a lower-order port, and a reflector connected between two ports of the circulator, and adapted to pass or reflect a channel input thereto, wherein the circulator receives a channel at a second port, outputs the channel to a third port connected to the reflector, receives the channel from the reflector at the third port, and outputs the channel to a fourth port thereof, thereby dropping the channel. Chen discloses an ADM unit 30 including a circulator 32 adapted to output a channel, input to a higher-order port, to a lower-order port, and a reflector 36, and adapted to pass or reflect a channel input thereto, wherein the circulator receives a

channel at a second port 38, outputs the channel to a third port 40 connected to the reflector 36, receives the channel from the reflector 36 at the third port 40, and outputs the channel to a fourth port 42 thereof, thereby dropping the channel. Chen does not specifically disclose a reflector connected between two ports of the circulator. Since Chen add/drop is used for uni-directional fiber, it would have been obvious to an artisan at the time of the invention was made to connect a reflector connected between two ports of the circulator for transmitting the optical signal back to bi-directional fiber. One of ordinary skill in the art would have been motivated to do that in order to redirect the output optical signal back to the bi-directional input/output fiber.

Regarding claim 11, Marom discloses in Figure 7, wherein the WDM unit comprises:

an end circulator 715 having first through third ports and adapted to output an optical signal, input to a higher-order port, to a lower-order port, the first and third ports of the end circulator connected to the optical fiber 750, 710 for transmission of the multiplexed optical signal; and

a wavelength division multiplexer/demultiplexer (WDM) 730 having a multiplexing port connected to the second port of the end circulator and providing a path 720 for a multiplexed optical signal, and a plurality of demultiplexing ports 740-1, 740-2, ..., 740-k respectively providing paths for demultiplexed channels.

Regarding claim 12, Examiner take an official notice that wavelength division multiplexer/demultiplexer (WDM) comprises an arrayed waveguide grating is well recognized in the art.



Regarding claims 13 and 16, Marom discloses in Figure 7, an optical add/drop multiplexer connected to an optical fiber for transmission of a multiplexed optical signal, comprising:

a wavelength division multiplexing/demultiplexing (WDM) unit 730 connected to the optical fiber 720 having input and output ports providing a path for a multiplexed optical signal, and a plurality of demultiplexing ports (740-1, 740-2, ..., 740-k) respectively providing paths for demultiplexed channels; and

a plurality of add/drop multiplexer (ADM) units (e.g., add/drop units that connect to respectively connected to demultiplexing ports 740-1, 740-2, ..., 740-k of the WDM unit. Marom differs from claim 10 of the present invention in that he does not specifically disclose each of the ADM units including a circulator adapted to output a channel, input to a higher-order port, to a lower-order port, and a reflector connected between two ports of the circulator, and adapted to pass or reflect a channel input thereto, wherein the circulator also receives a channel at a fifth port, outputs the channel to a first port connected to the reflector, and receives the channel from the reflector at the first port, thereby adding the channel. Chen discloses an ADM unit 30 including a circulator 34 adapted to output a channel, input to a higher-order port, to a lower-order port, and a reflector 36, and adapted to pass or reflect a channel input thereto, wherein the circulator also receives a channel at a fifth port 48, outputs the channel to a first port 44 connected to the reflector 36, and receives the channel from the reflector 36 at the first port 44, thereby adding the channel.

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It would have been obvious to an artisan at the time of the invention was made replace the ADM unit taught by Chen with the ADM of Marom discloses in Figure 7. One of ordinary skill in the art would have been motivated to do that in order to redirect the output optical signal back to the bi-directional input/output fiber.

Regarding claims 14 and 17, Marom discloses in Figure 7, wherein the WDM unit comprises:

an end circulator 715 having first through third ports and adapted to output an optical signal, input to a higher-order port, to a lower-order port, the first and third ports of the end circulator connected to the optical fiber 750, 710 for transmission of the multiplexed optical signal; and

a wavelength division multiplexer/demultiplexer (WDM) 730 having a multiplexing port connected to the second port of the end circulator and providing a path 720 for a multiplexed optical signal, and a plurality of demultiplexing ports 740-1, 740-2, ..., 740-k respectively providing paths for demultiplexed channels.

Regarding claims 15 and 18, Examiner take an official notice that wavelength division multiplexer/demultiplexer (WDM) comprises an arrayed waveguide grating is well recognized in the art.

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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- a. Toyohara U.S. Patent no. 5,953,470. Circuit for optical WDM system
- b. Sian et al. U.S. Patent no. 6,449,072. Add/Drop multiplexer
- c. Duerksen U.S. Publication no. 2002/0054406. Bidirectional WDM optical communication network

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung D Tran whose telephone number is (571) 272-3025. The examiner can normally be reached on 9:00 AM - 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dzung Tran  
01/03/2006

  
DZUNG TRAN  
PRIMARY PATENT EXAMINER